

[National Dog Show 2020](#) (1 hr 14 min)

[How Dogs Eventually Became Our Friends](#) (9m)

- Worksheet, NOT a quiz

Best in Show Finally (43:30 to End)

- [Best in Show Paragraph](#) (worksheet print 1 each)

Eight Below Movie

The Eight Below sled dogs included:

- Two Alaskan Malamutes (**Buck and Shadow**)



[Alaskan Malamute](#) is a large breed of dog that was originally bred for their strength and endurance to haul heavy freight as a sled dog and hound They are similar to other [arctic](#), [Husky](#), and [Spitz Dog Breeds](#) such as the [Greenland Dog](#), [Canadian Eskimo Dog](#), the [Siberian Husky](#), and the [Samoyed](#).



[Greenland Dog](#) - The [Inuit dogs](#) (**Inuit people**) from Canada (Canadian Eskimo Dog) and Greenland (Greenland

Dog) descended from dogs associated with the Thule people, who relied on them for transportation from Siberia.



Canadian Eskimo Dog - Descended from dogs associated with the Thule people, who relied on them for transportation from Siberia.



Samoyed - It takes its name from the Samoyedic peoples of Siberia. These nomadic reindeer herders bred the fluffy white dogs to help with herding.



The Thule people developed in coastal Alaska by the year 1000, and expanded eastwards across Canada, reaching Greenland by the 13th century.

- Six [Siberian Huskies](#) (Max, Maya, Truman, Dewey, Shorty, and Old



Jack)

The Siberian Husky is a medium-sized working dog breed. The breed belongs to the Spitz genetic family. It is recognizable by its thickly furred double coat, erect triangular ears, and distinctive markings, and is smaller than a very similar-looking dog, the Alaskan Malamute. Siberian Huskies originated in Northeast Asia where they are bred by the Chukchi people for sled-pulling, guarding, and companionship.



The [Chukchi people](#) are traditionally divided into the *Maritime Chukchi*, who had settled homes on the coast and lived primarily from sea mammal hunting, and the *Reindeer Chukchi*, who lived as nomads in the inland tundra region, migrating seasonally with

their herds of reindeer. The Russian name "Chukchi" is derived from the Chukchi word *Chauchu* ("rich in reindeer"), which was used by the 'Reindeer Chukchi' to distinguish themselves from the 'Maritime Chukchi,' called *Anqallyt* ("the sea people").



The exact origins of Spitz dogs are not known, though most of the spitzes seen today originate from the Arctic region or Siberia.

Now Showing: Eight Above ABOMINABLE BELOW

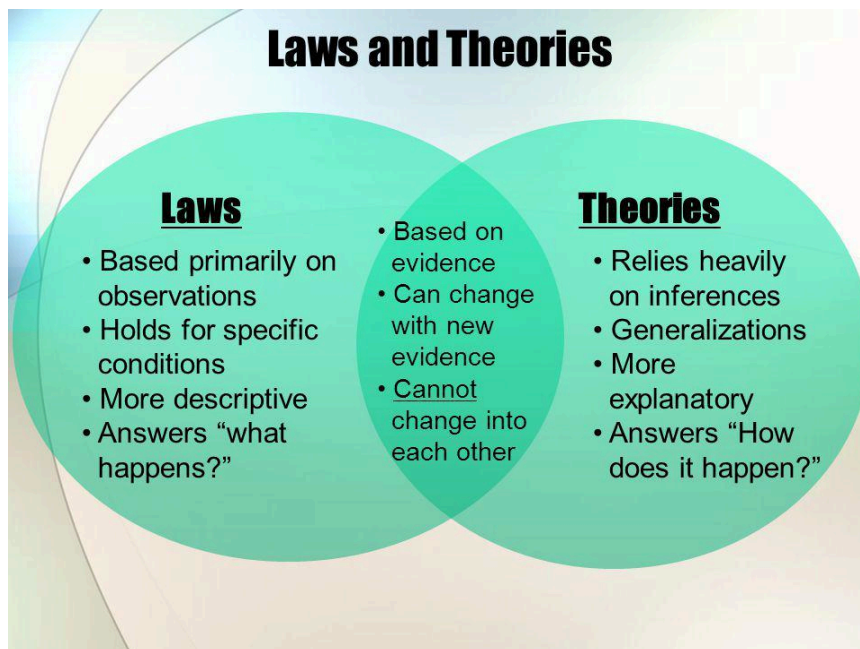


In the sequel, the original eight are back on the sled. Genes of the unlucky dogs were cloned to revive the great eight. The great eight had just returned home from their recent mission in Antarctica, and are lounging beside their pool in Pasadena.

Maxx receives a call for help through his cell-collar. Their arch nemesis is the Abominable Snowman is destroying all living organisms in Antarctica. With his large teeth and rocket speed he is eating every living organism he sees. He is demanding to be the new leader of the snow dogs.

Help 'the dogs' defeat A.Snow by finding answers to the following challenges:

1. The Abominable Snowman tells them, ***“Evolution is just a theory. You cannot prove that I am not a snow dog.”***
 - a. *Utilize the following image that Maya brought to the battle to explain the term “evolution” to A. Snow.*
 - b. Use the following diagram to help them respond to A. Snow’s statement.
 - c. On the next page, describe “scientific theory”



2. Scientific LAWS answer _____ **WHAT** _____ happens.

3. Scientific THEORIES answer _____ **HOW** _____ it happens.

- a. Note: The ‘**HOW**’ may change as new techniques and processes are developed.

4. A. Snow responds to your answer saying, **“The hairless skin-freaks that you call people, don’t understand evolution. I exist because I want to exist. You dawgs exist merely**

because people wanted you to exist. Nothing more, nothing less.”

a. Write your reply below.

Explain how organisms evolve (Hint: Include reproduction):

3. Mr. A. Snow is afraid his species will become extinct because he does not have a mate. Though he is stupid, made only of frozen water and bad breath, he knows species cease to exist when they cannot reproduce.

a. In Antarctica, explain why an all white dog may be more likely to survive in his presence.

Explain why “white” dogs are less likely to be caught and killed in Antarctica:

Eight Below Eight Below

Evolution = Reproduction



Genetic Survival Traits vs Abominable Snowman

- **Trait** a distinguishing quality or characteristic. (eye color, hair color...)



[Sled Dog Traits](#) (article)

[Sled Dogs - Life Below Zero Natl. Geo.](#) (4m)

[10 Things You Didn't Know About the Siberian Husky](#)

...from ***“Dogs Need These Traits”***

“The interplay between genes and behavior in dogs is more extreme than in humans.”

“Unlike humans... when you look for behavioral genes, you expect to see a large number of genes of small effect,” she says.

“One of the great things about looking in dogs — because selection has been so hard and so fast — is that you see a small number of genes of very large effect.”

WHAT MAKES A SLED DOG distinct from any Dog: 7 key traits

1. Differences in temperature perception (**physical trait**)
2. Ability to ensure oxygen supply to the body during endurance runs (**physical trait**)
3. A diet rich in fatty acids (**digestive system trait**)
4. Not relying on sugars stored in muscle for energy (**chemical trait**)
5. Trainability (**brain trait, disposition trait**)
6. Communication skills (**brain trait, disposition trait**)
7. Mental toughness (**brain trait, disposition trait**)

P=G+E

Evolution of the Spotted Moth by NATURAL SELECTION (5m)

- Natural Selection
- Human-created Evolution

Evolution: It's a Thing (Crash Course) (11m)

- Microevolution (Bozeman) (7m) (marshmallows)

Evolution movie (1:41:00) Amazon Evolution Movie Chromosome Copy Machine (WRKSHT)

- Why are we the only humans left? (7m)
- **Mutations - Common and Harmless** (worksheet key)
- Mutations in DNA (2m)
 - **Marshmallows & Toothpicks**
 - **Dominant, Recessive & Mutations (typos)**
- **Radiation Can Impact DNA**



- Blinky

- Way back in 1990, an episode of *The Simpsons* introduced Blinky, a mutated orange fish with three-eyes caught in the waters near the Springfield Nuclear Power Plant, emblematic of mean Mr. Burns' callousness towards the environment — and now, it seems, life has imitated cartoon. Recently, a group of fisherman on a lake in the Córdoba province of Argentina reeled in a fish that had an extra eye.
-
- [Three-eyed Fish Argentina](#)
- [Mutant Fish Around the World](#)
- [Strangest Mutant Animals](#)
- And it just so happens that that lake is situated right next to a nuclear power plant, too.
- [Mutations Caused by Radiation](#) (7m)
- [Chernobyl Mutations](#) (4m)
- [Chernobyl: Meet the Mutants](#) (8m)

[Babies Born Addicted to Drugs](#)

- [Hooked and Hopeless](#)

[COVID-19 Mutation and Evolution](#)

EVOLUTION thru NATURAL SELECTION or SEXUAL SELECTION

- Natural Selection = NATURE selects
- [Sexual Selection](#) (4m) = ORGANISM selects
 - What is sexually attractive to humans may change by culture or place.

[CK12.org Evolution: 45 Billion Years in 24 hours](#) (2m)

- All recorded human life fits into the last few seconds

[Evolution of Speed](#) (44m)

- Biology - is the study of living organisms
- Physics - is the study of motion, energy and force.
- **MATH is the LANGUAGE of SCIENCE**
 - **How does 'running speed' require PHYSICS?**
 - **Bigger, Stronger, Faster**

Should we do something, just because we can?

[Teacup Yorkie puppies](#) (3m)

[Adam Ruins Purebred Dogs](#) (4m)

[Adam Ruins Purebred Dog Genetic Monsters](#) (2)

[Teacup Dogs: Everything You Need to Know](#) (5m)

- A student's mother paid \$2,000 for a teacup Yorkie
- She sold it 2 months later for \$1,000
- Puppy dies 2 months later. (5 months old)

[Why are Siblings Different?](#) (10m)

[Pink Rabbit](#)

[Bioluminescent Animals Gallery](#)

Adaptation

- **Species Evolve**
- **Individuals do NOT EVOLVE or "GET USE TO"**
 - Adaptation means...
 - Individuals which could NOT handle the challenge DIED, and their genes did NOT carry to a next generation.
 - Individuals who could handle the challenge, LIVED, REPRODUCED, and their genes carried to the next generation

[Dogue de Bordeaux & Chihuahua Standards IMAGES](#) (Google Doc)

Turner & Hooch movie

[History of the Bulldog](#) (read)

- Over the course of 350 years, until bull-baiting was banned in 1835, bulldogs were bred for aggression, and an 80-pound dog could easily bring down a bull weighing close to a ton by corkscrewing its own body around its neck, tossing the bull over its own center of gravity.

Dog Breed Reports 101

- [Shrink-a-Bulls](#)

[When Antarctica Was Green](#) (12m)

[Baby Cheetahs](#) (3m)

- [15 Newborn Animals](#) (20m)

[How Cheetahs Are Killing Themselves](#) (3m)

[Chickens and Rat Pup](#) (open preview to watch)

[Skipper 6-legged puppy](#)

[Overgrown Sheep Loses 78 lbs.](#)

[Genetic Hybrid](#)

- Rare exceptions to the “same species can breed” rule
- Often created thru artificial insemination

[Animal Hybrids](#)

- rare exceptions where animals of differing species can create hybrid offspring
- may or may not be infertile.

Example: HORSES and DONKEYS are different species, with different numbers of chromosomes.

Mules can be either male or female, but, because of the odd number of chromosomes, they can't reproduce.

[15 Hybrid Animals](#) (20m)

- a) In some countries it is **ILLEGAL** for humans to create some of these hybrids.
- b) Most of these hybrids do **NOT** exist in nature, because the animals will **NOT** interbreed.
- c) Most of these hybrids are artificial insemination, or petri dish fertilization of egg and sperm, creations by humans.

[10 Awesome Hybrid Animals](#) (11m)

[How Evolution Creates Hybrids](#) (4m)

Human-created Evolution

[Elephants without Tusks](#) (4m)

- ? Did elephants grow smaller tusks to avoid being killed?

Other Hybrids

- **Pizzly** naturally occurring now, because of melting ice in arctic.



- **Pumapard**



- **Geep**



- **Yakalo**





- **Tigard**



- **Coywolf**

- A recent development, and a growing problem. Unlike wolves - who live exclusively in the wilderness - coywolves take after their coyote ancestors and can quite comfortably coexist with humans in urban environments. They are rarely skittish around humans, and it's thought that at least one woman in Nova Scotia was killed by a pack of coywolves while hiking alone. It's clear coywolves are not deterred by our presence, and they can actually thrive in major cities.

They have been known to roam the streets of Washington, Boston, and even New York City, where they use abandoned subway lines to travel freely.

- Can coydogs reproduce? Unlike many other hybrids, such as mule and liger that don't reproduce, coydogs produce puppies that are partially fertile.



- **NOTRealo**



- **Also-NOTRealo**

- **Note:** The Woodward Academy Science Department has 'special permission' to create NOTRealo's...NOT.

[How Evolution Creates Hybrids](#) (4m)

[Why Mules Can't Have Babies](#) (3m)

[Rarest Hybrid Animals](#) (10m)

14 Scary Hybrids That Actually Exist (19m)

- Humanzee?
- Can Humans and Chimpanzees Have Babies? (4m)
- Internet-created fakes, hoaxes exist, and will likely increase.

Scientific LAW vs Scientific THEORY (5m)

Phenotype = Genotype + Environment

What is a genetic MUTATION?

REM reproduction=evolution=mutation

- an alteration in the **genetic** material of a cell of a living organism or of a virus
- Genetics can be transmitted to the cell's or the virus's **descendants**.

Sled Dogs Banned from Antarctica (5m)

Purebreds vs. Mutts (crossbreds / hybrids)

- 10 Rarest Dog Breeds
- 15 Abnormally Strong Dogs
- 10 Fastest Dog Breeds
- National Dog Show
- Adam Ruins Purebreds
- 100 Years of Breeding These Breeds
- The Purebred Crisis
- Domestication Syndrome

1. Nuclear Reactor SAVES the Sled Dogs !!!

- a. [ANTARCTIC NUCLEAR REACTOR AT McMURDO STATION](#)
(26) 1962-1972

1.4 CHARACTERISTICS OF LIFE

1. It responds to the environment.
2. It grows and develops.
3. It produces offspring.
4. It maintains homeostasis - **Steady internal, physical, chemical conditions**
5. It has complex chemistry.
6. It consists of cells.

LIFE RESPONDS TO THE ENVIRONMENT

1. “**Sh*t Happens**” aka “**Genetic Mutations Happen**”
 - a. What is a genetic mutation?
 - i. an alteration in the genetic material of a cell of a living organism or of a virus that is more or less permanent and that can be transmitted to the cell's or the virus's descendants. The genomes of organisms are all composed of DNA, whereas viral genomes can be of DNA or RNA.
 - b. [The Elephants Foot - Corpse of Chernobyl](#) (14m)
 - i. The Chernobyl disaster was caused by a nuclear accident that occurred on Saturday 26 April 1986, at the No. 4 reactor in the Chernobyl Nuclear Power Plant.
 1. [Map](#)
 - c. [Radioactive Wolves of Chernobyl](#) (52m)
 - d. [Animals of Chernobyl: Meet the Mutants](#) (8m)
 - e. [Wildlife Takeover: How Animals Reclaimed Chernobyl](#)

2. What causes a MUTATION?

- a. Most gene mutations occur after you're born and aren't inherited.
- b. Forces which can cause genetic (gene) mutations:
 - i. smoking, radiation, viruses, cancer-causing chemicals (carcinogens), obesity, hormones, chronic inflammation and a lack of exercise.
- c. Gene mutations occur frequently during normal cell growth.
 - i. [How Did Blue Eyes Evolve? \(3m\)](#)
 - ii. [Crash Course: Natural Selection \(12\)](#)
 - iii. [How Your DNA Proves Evolution Is Real \(8m\)](#)
 - iv. [Animals Gone Extinct Because of Humans \(11m\)](#)
 - v. [How Gene Editing Is Curing Disease \(13\)](#)

- 3. Mutations May or May NOT be caused by the environment
 - a. [Mutations \(3m\)](#)
 - b. [How Genetic Mutations Evolve PART 1 \(7m\)](#)
 - i. [Part 2 \(9m\)](#)
- 4. Random or Natural Mutations
 - a. [Rarest Human Mutations Ever \(11m\)](#)
 - b. [10 People Whose Genetics Made Them Unique \(10m\)](#)
 - c. [10 Pets Whose Genetics Made Them Unique \(10m\)](#)

Life Grows and Develops

- 1. **Phenotype = Genotype + Environment**
- 2. What is EVOLUTION? **Evolution = Reproduction**
 - a. [Creatures That Are Evolving Right Before Our Eyes \(9m\)](#)
 - b. [Strange Animals That Look Like Lies But Are Real \(25m\)](#)
 - c. [Evolution of Elephants \(7m\)](#)
 - d. [10 Ways Humans Might Involve in the Future \(10m\)](#)

LIFE PRODUCES OFFSPRING

- 1. What is EVOLUTION? **Evolution = Reproduction**
 - a. [What if our bodies keep evolving? \(5m\)](#)
 - b. [10 Extinct Animals Scientists are Going to Revive \(10m\)](#)

LIFE MAINTAINS HOMEOSTASIS

LIFE HAS COMPLEX CHEMISTRY

1. Drug use?

LIFE CONSISTS OF CELLS

Other

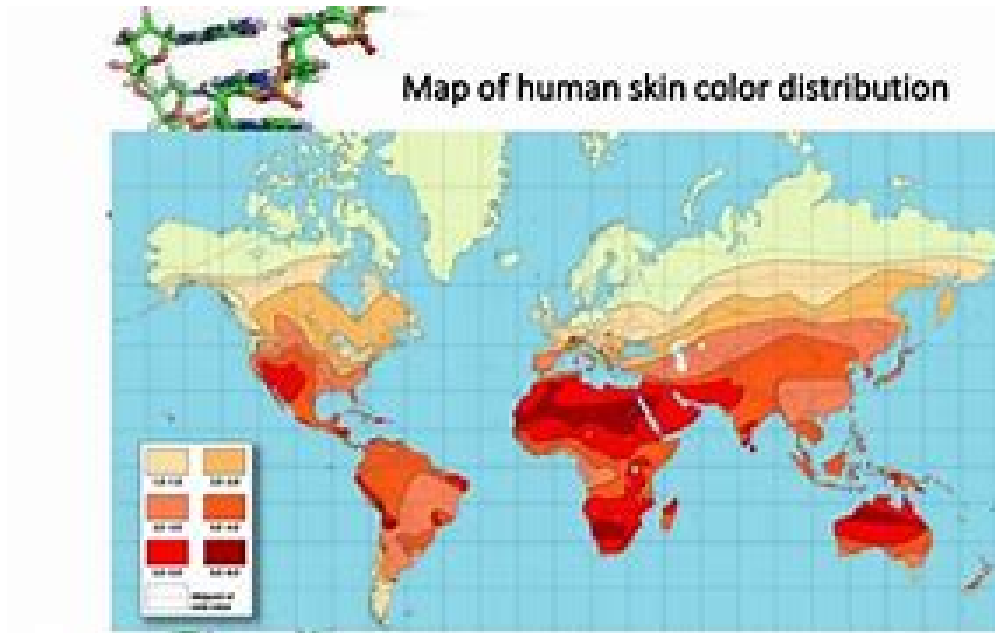
What is EVOLUTION? **Evolution = Reproduction**

- [Rarest Eye Colors in Humans \(10m\)](#)
- [Genetic Mutations \(48m\) Natl. Geo.](#)
- [18 Genetically Modified Organisms You Don't Know About \(9m\)](#)
- [Scariest Hybrid Animals \(19m\)](#)
- [What is Evolution? \(9mn\)](#)
- [Evolution - What Darwin never knew \(1hr51mn\)](#)
- [Mankind Rising-Where Do Humans Come From? \(43mn\)](#)
- [The Dawn of Human History-Mankind-History Channel \(44mn\)](#)
- [Life After People: The Last Humans Left on Earth \(S1, E1\) HistChan \(44 mn\)](#)

Human Anatomy

- Skin Color
- [The Science of Skin Color \(5m\)](#)
- [The BIOLOGY of Skin Color \(18m\)](#)



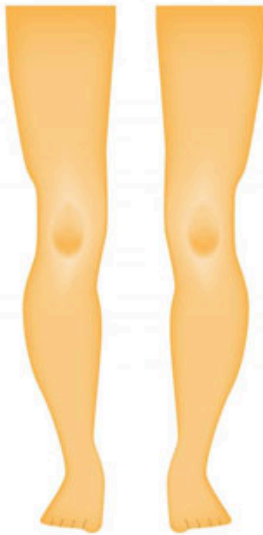


-
- [“The History of Naked Sweaty and Colorful Skin in the Human Lineage”](#) (YT 1:22:00m)
 - Dermis is our body’s largest organ.
 - Rickets or Melanoma
 - Rickets - The skin is responsible for producing vitamin D. During exposure to sunlight, ultraviolet radiation penetrates into the epidermis

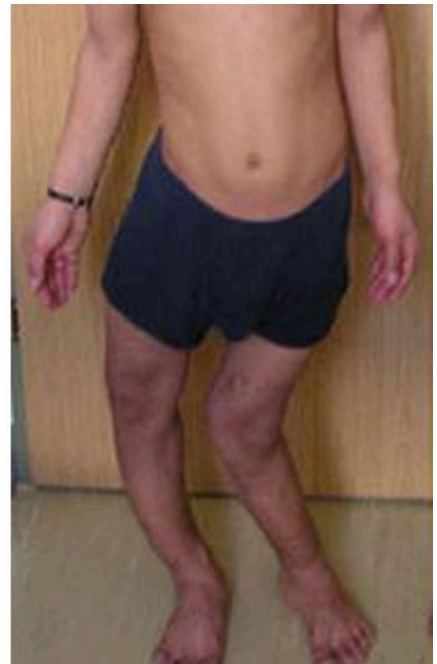




Normal

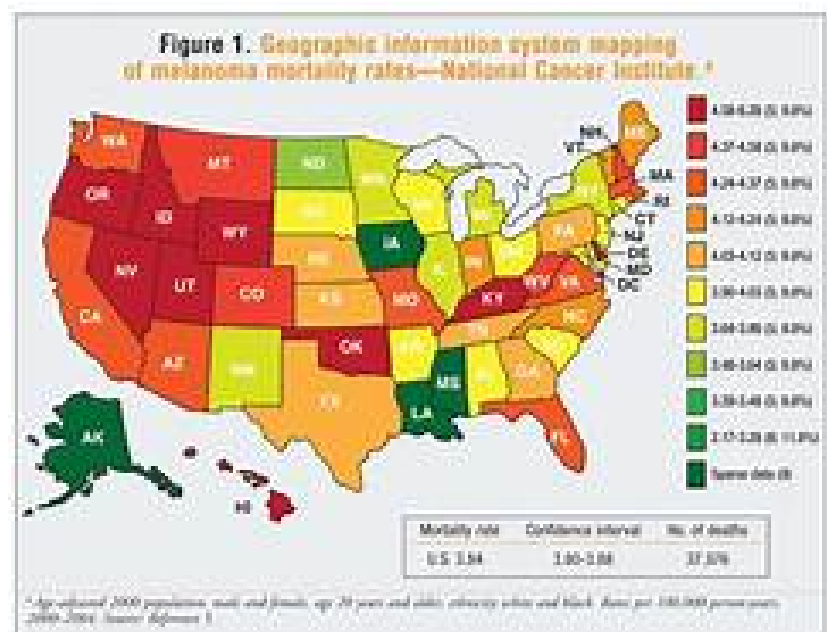


Rickets

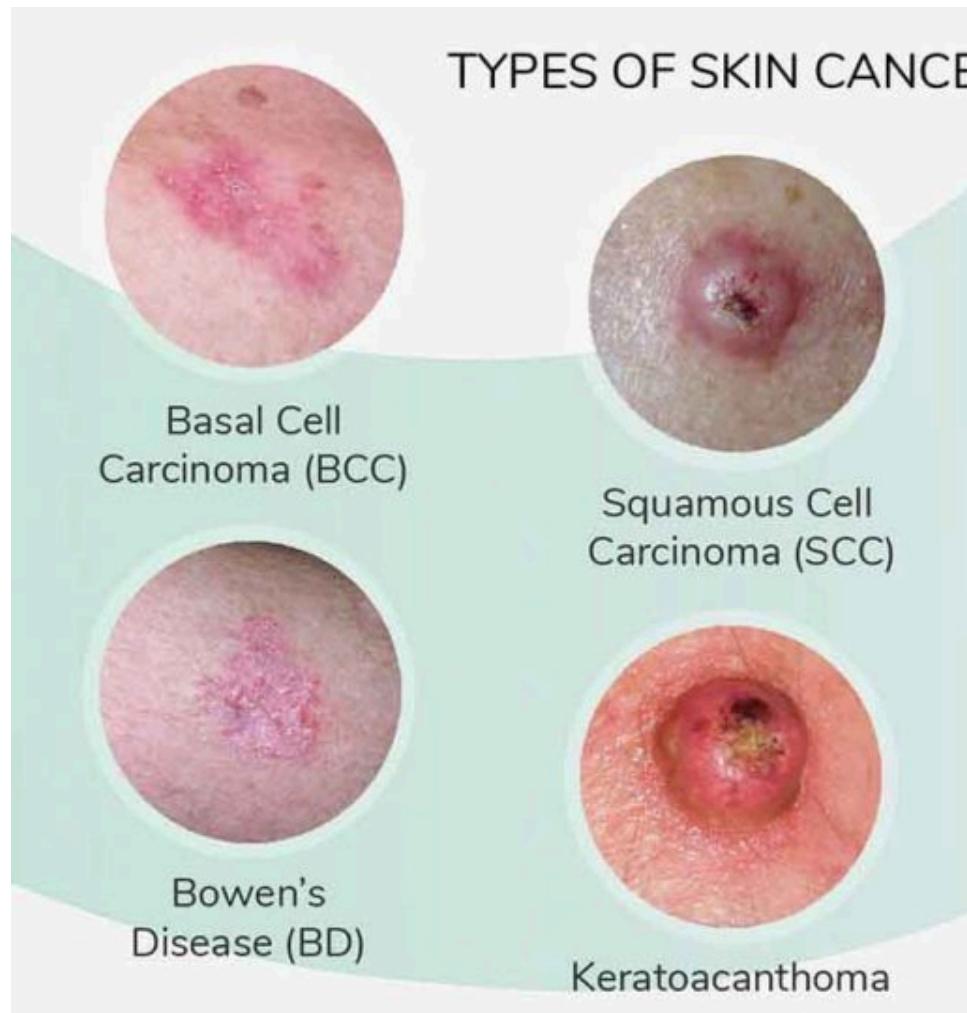


- **To Prevent Rickets consume Vit. D-rich Foods**
 - **Cod Liver Oil**
 - **Salmon**
 - **Canned Tuna**
 - **Mushrooms**

- Egg Yolks
 - Herring and Sardines
 - Swordfish
 - Fortified Milk
 - Fortified Yogurt
 - Fortified Orange Juice
- UV light
 - [Skin Cancer Foundation](#) (website)
 - Ultraviolet A (UVA) has a longer wavelength, and is associated with skin aging.
 - Ultraviolet B (UVB) has a shorter wavelength and is associated with skin burning.
 - **Unprotected exposure to UVA and UVB damages the DNA in skin cells, producing genetic defects, or mutations, that can lead to skin cancer (as well as premature aging.) These rays can also cause eye damage, including cataracts and eyelid cancers.**
 - Melanoma Mortality in U.S.



■ Melanoma (skin cancer)



● Malignant Melanoma

- The American Cancer Society reports the five-year survival rate for stage 3 melanoma ranges from 40 to 78 percent. The 10-year survival rate ranges from 24 to 68 percent. Stage 4 melanoma means the cancer has spread to other parts of the body, such as the lungs, brain, or other organs and tissue.

[What will future humans look like?](#)

[How The Human Face Might Look In 100,000 Years? \(Forbes Article\)](#)

[English Bulldog Cesarean Section](#) (YT 17m)

[Lancelot Link Secret Chimp](#)

[Lancelot Link and the Evolution Revolution](#)

[The 60's Golden Age of Bubblegum Music](#)

[Saturday Morning Memories 1964-1976](#)

[Old Commercials - Politically Incorrect Today](#)

How much water do you need to drink per day?

[Adam Ruins - You Need 8 Glasses of Water Per Day](#)

[Adam Ruins - Moderate Drinking Isn't Really Good For You](#)

- **Alcohol is a group 1 known carcinogen**
- Human Carcinogens Group 1 (a few examples)
 - Aflatoxins
 - Alcoholic beverages
 - Netflix “The Truth About Alcohol”
 - Aluminum production
 - Asbestos
 - Chromium (VI) compounds
 - Coal gasification
 - Engine exhaust, diesel
 - Ethanol in alcoholic beverages
 - Formaldehyde
 - Hepatitis C virus
 - Ionizing radiation (all types)
 - Shale oils
 - Soot (as found in workplace exposure of chimney sweeps)
 - Tobacco, smokeless
 - Tobacco smoke, secondhand
 - Tobacco smoking
 - Welding fumes

[Adam Ruins FREE Internet](#)